

March 18 to March 24, 2012 (Week 12)

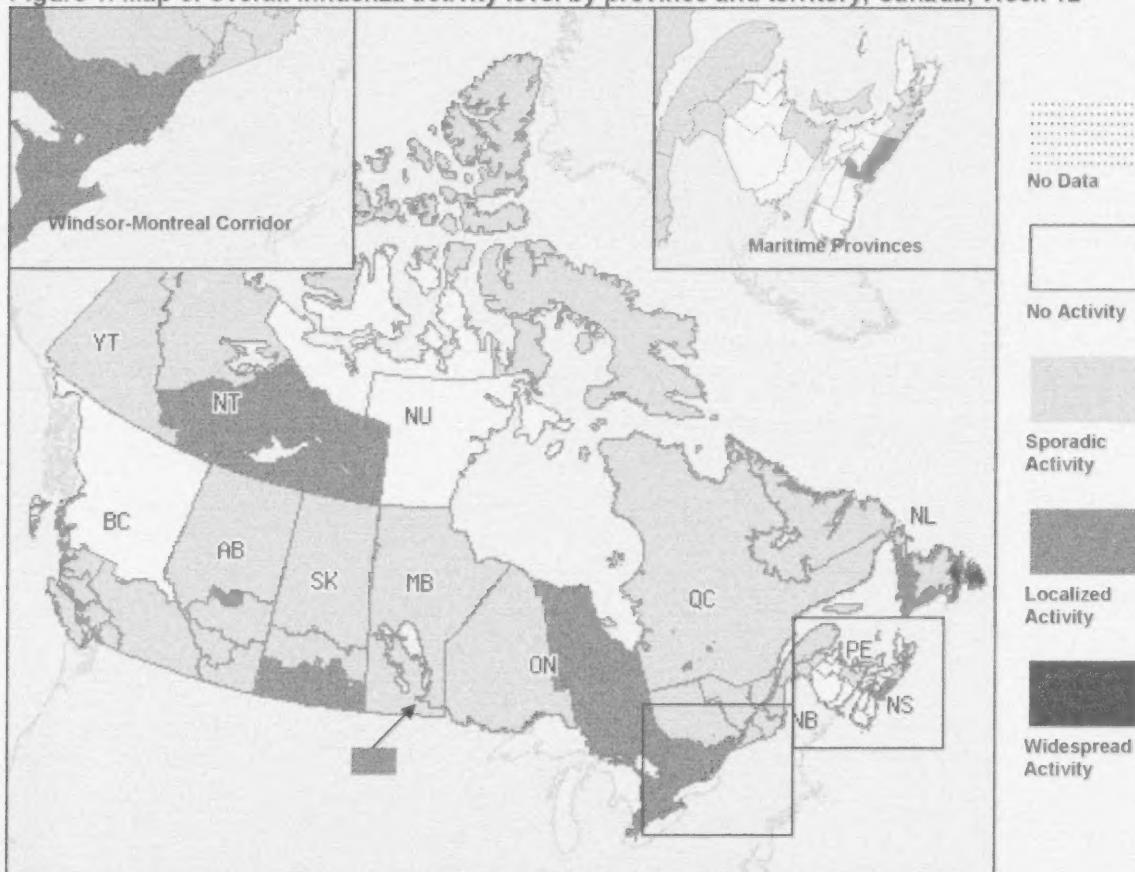
## Overall Influenza Summary

- Influenza activity in Canada continued to increase overall compared to the previous week; most indicators (such as laboratory detections, outbreaks, hospitalizations and ILI) showed higher levels in week 12 compared to the previous week. Certain regions in the country (in ON, the Prairies and the Atlantic Region) are showing higher levels of activity compared to other regions.
- Fifty-five outbreaks of influenza or ILI were reported this week (29 in LTCFs, 7 in hospitals, 3 in schools and 16 others).
- In week 12, 1,309 laboratory detections of influenza were reported (10.0% - A(H3); 7.5% - A(H1N1)pdm09; 21.9% - unsubtyped and 60.6% influenza B). The percent positive for influenza B detections increased in all regions in Canada in week 12 compared to the previous week.
- 135 influenza-associated hospitalizations were reported this week (54 paediatric through IMPACT surveillance and 81 adult through aggregate surveillance)
- The ILI consultation rate increased compared to the previous week but remains within expected levels.

## Influenza Activity (geographic spread) and Outbreaks

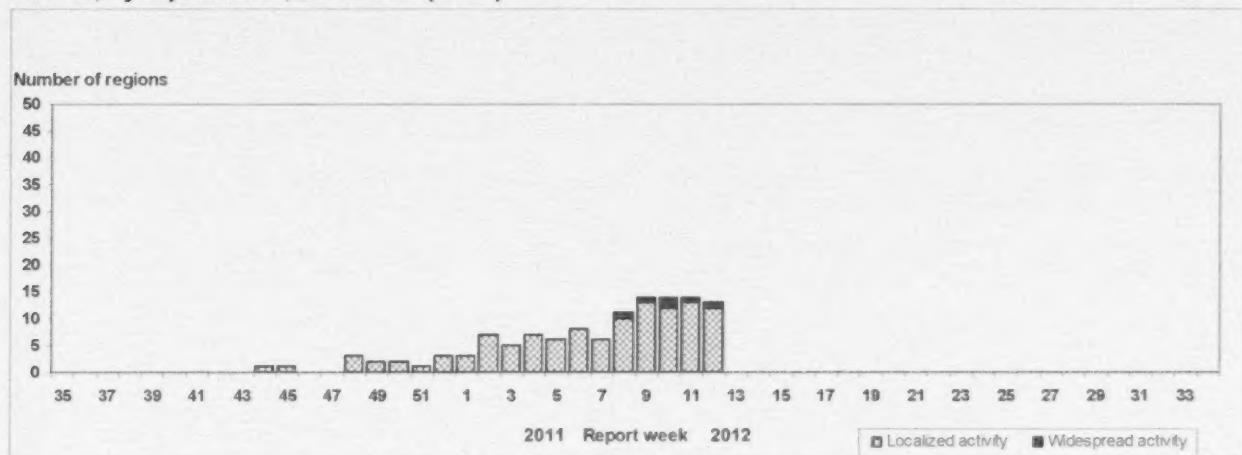
In week 12, 1 region reported widespread influenza activity (NL), 12 surveillance regions (within AB, SK, MB, ON, NS, NL & NT) reported localized activity and 29 regions (within all provinces and territories) reported sporadic influenza activity (see Figure 1). Fifty-five outbreaks of influenza or ILI were reported this week: 29 in long-term care facilities (2 in AB, 1 in SK, 1 in MB, 22 in ON, 2 in NS & 1 in NT), 7 in hospitals (1 in AB, 4 in ON, 1 in NS & 1 in NL), 3 in schools (in NS) and 16 others (14 in ON & 2 in NL) (Figure 3).

**Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 12**



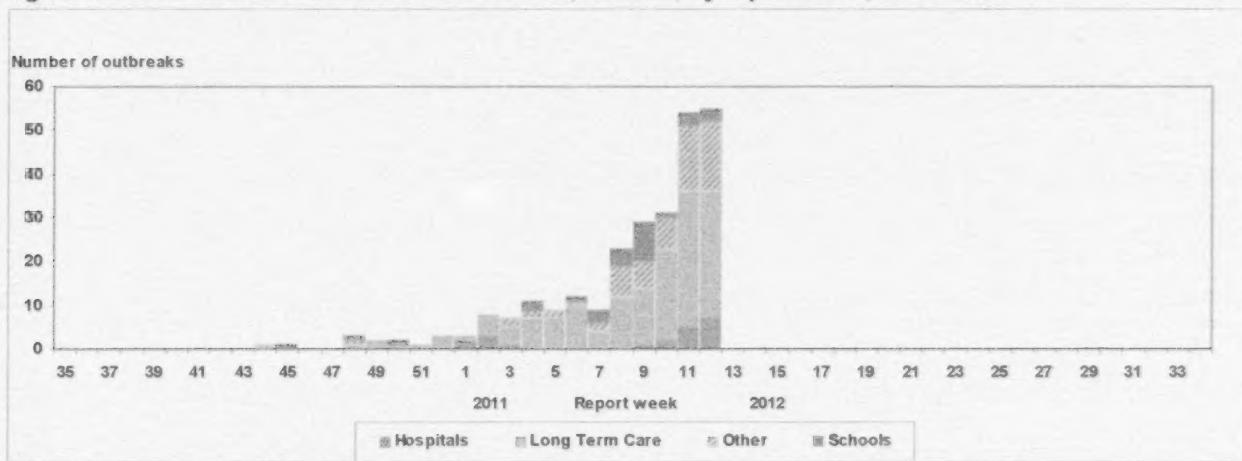
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

**Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)**



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

**Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012**



## Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests continued to increase and was 24.4% (1,309/5,363) for week 12 (Figure 4 & 5). The proportion of positive detections for influenza B continued to increase (14.8%) while the proportion positive for influenza A (9.6%) continued to decline in week 12. To date this season, influenza B remains the predominant virus type circulating in Manitoba, Ontario and all of the Atlantic Provinces except New Brunswick.

Cumulative to date of influenza virus detections by type/subtype is as follows: 52.8% influenza A (40.5% - A(H3); 18.8% - A(H1N1)pdm09; 40.7% - unsubtyped) and 47.2% influenza B (Table 1).

Detailed information on age and type/subtype were received on 5,812 cases to date this season (Table 2). The proportions of cases by age group are as follows: 21.6% were < 5 years; 17.9% were between 5-19 years; 23.2% were between 20-44 years; 15.3% were between 45-64 years of age; 21.8% were  $\geq$  65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (27%) and those  $\geq$  65 years of age (23%). The largest proportion of influenza B cases were under 20 years of age (50%).

In week 12, the proportion of tests positive for RSV declined further to 9.6%. Percent positives for RSV were highest in the Atlantic Region for week 12. The percentage positive for the other respiratory viruses remained fairly similar compared to the previous week (parainfluenza-1.1%; adenovirus-2.0%; human metapneumovirus-4.9%; rhinovirus-4.9%; and coronavirus-3.8%) (Figure 5). For more details, see the weekly [Respiratory Virus Detections in Canada Report](#).

**Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012**

| Reporting provinces | March 18 to March 24, 2012 |          |            |           |            | Cumulative (August 28, 2011 to March 24, 2012) |             |          |             |            |             |             |
|---------------------|----------------------------|----------|------------|-----------|------------|--|-------------|----------|-------------|------------|-------------|-------------|
|                     | Influenza A                |          |            |           | B          | Influenza A                                    |             |          |             | B          |             |             |
|                     | A Total                    | A(H1)    | A(H3)      | Pand H1N1 | A (UnS)*   | Total  | A Total     | A(H1)    | A(H3)       | Pand H1N1  | A (UnS)*    | Total       |
| BC                  | 14                         | 0        | 9          | 5         | 0          | 9  | 427         | 0        | 367         | 54         | 6           | 66          |
| AB                  | 117                        | 0        | 66         | 26        | 25         | 16   | 761         | 0        | 585         | 120        | 56          | 71          |
| SK                  | 37                         | 0        | 20         | 3         | 14         | 8  | 379         | 0        | 268         | 29         | 82          | 11          |
| MB                  | 13                         | 0        | 0          | 0         | 13         | 50   | 41          | 0        | 8           | 1          | 32          | 89          |
| ON                  | 121                        | 0        | 27         | 61        | 33         | 406  | 689         | 0        | 171         | 375        | 143         | 1634        |
| QC                  | 203                        | 0        | 7          | 3         | 193        | 238  | 1233        | 0        | 37          | 79         | 1117        | 1090        |
| NB                  | 2                          | 0        | 2          | 0         | 0          | 8  | 39          | 0        | 11          | 14         | 14          | 32          |
| NS                  | 0                          | 0        | 0          | 0         | 0          | 21   | 2           | 0        | 0           | 0          | 2           | 55          |
| PE                  | 0                          | 0        | 0          | 0         | 0          | 3  | 2           | 0        | 1           | 1          | 0           | 11          |
| NL                  | 9                          | 0        | 0          | 0         | 9          | 34   | 28          | 0        | 9           | 4          | 15          | 159         |
| <b>Canada</b>       | <b>516</b>                 | <b>0</b> | <b>131</b> | <b>98</b> | <b>287</b> | <b>793</b>                                     | <b>3601</b> | <b>0</b> | <b>1457</b> | <b>677</b> | <b>1467</b> | <b>3218</b> |

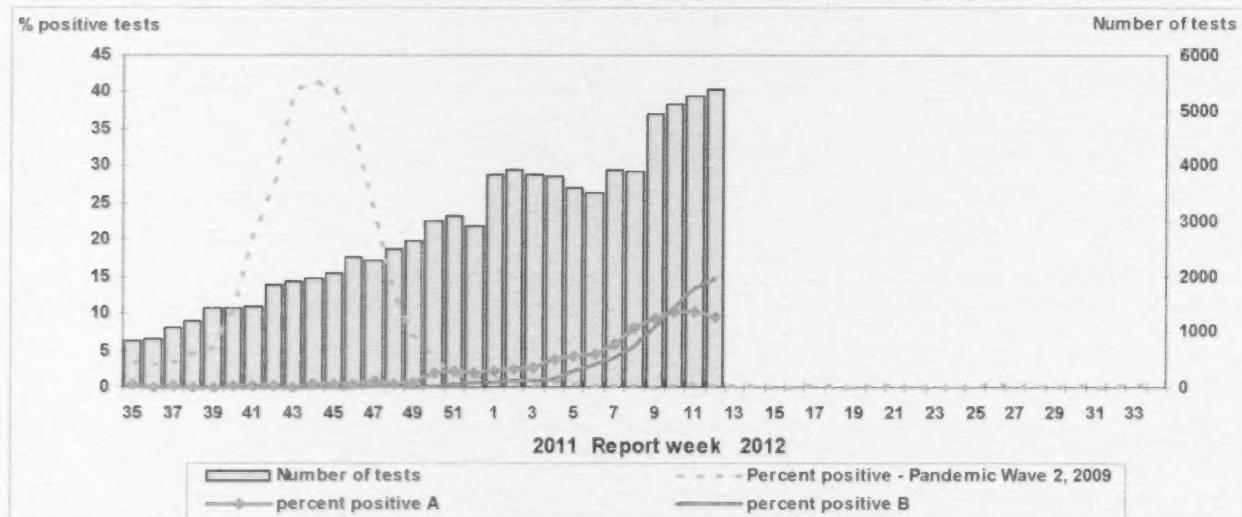
\*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

**Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012\***

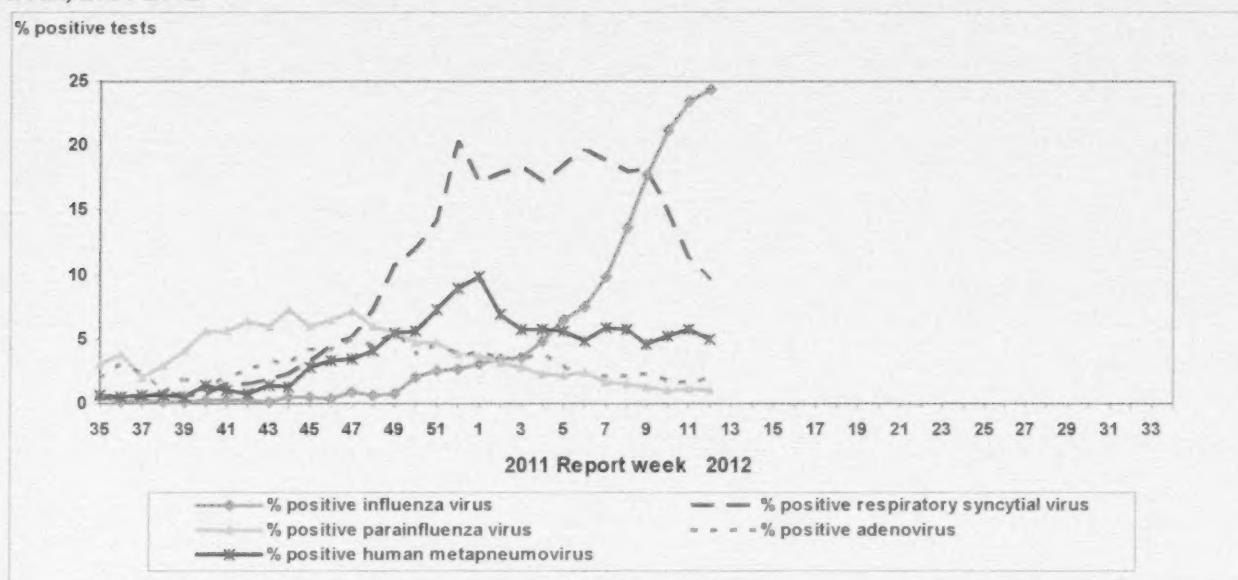
| Age groups   | Weekly (Mar. 18 to Mar. 24, 2012) |               |           |              |            | Cumulative (Aug. 28, 2011 to Mar. 24, 2012) |               |             |              |             |
|--------------|-----------------------------------|---------------|-----------|--------------|------------|---|---------------|-------------|--------------|-------------|
|              | Influenza A                       |               |           |              | B          | Influenza A                                 |               |             |              | B           |
|              | A Total                           | Pandemic H1N1 | A/H3N2    | A unsubtyped | Total      | A Total                                     | Pandemic H1N1 | A/H3N2      | A unsubtyped | Total       |
| <5           | 69                                | 13            | 12        | 44           | 72         | 638   | 137           | 229         | 272          | 618         |
| 5-19         | 30                                | 3             | 8         | 19           | 76         | 372   | 52            | 200         | 120          | 667         |
| 20-44        | 70                                | 10            | 11        | 49           | 71         | 885   | 177           | 326         | 382          | 466         |
| 45-64        | 63                                | 4             | 10        | 49           | 43         | 582   | 108           | 186         | 288          | 306         |
| 65+          | 83                                | 5             | 34        | 44           | 91         | 741   | 49            | 466         | 226          | 525         |
| Unknown      | 0                                 | 0             | 0         | 0            | 0          | 12  | 6             | 6           | 0            | 0           |
| <b>Total</b> | <b>315</b>                        | <b>35</b>     | <b>75</b> | <b>205</b>   | <b>353</b> | <b>3230</b>                                 | <b>529</b>    | <b>1413</b> | <b>1288</b>  | <b>2582</b> |

\*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

**Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012**



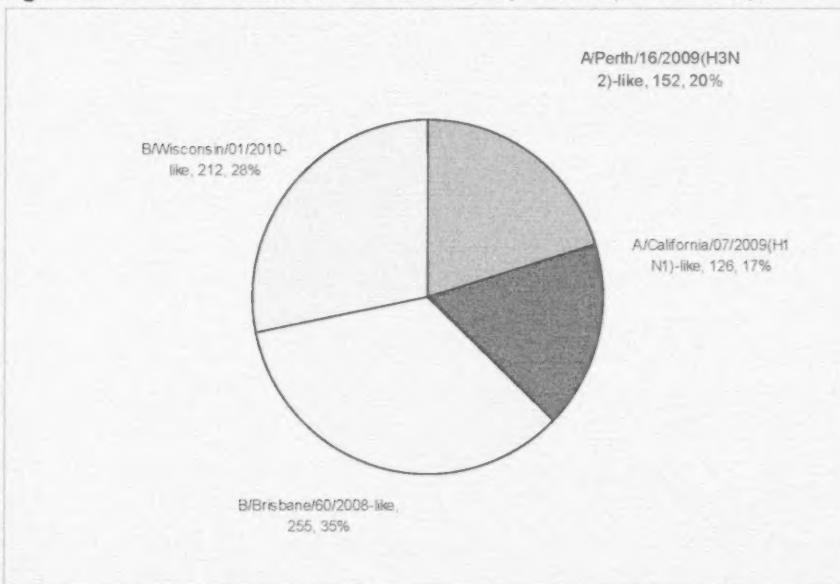
**Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012**



## Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 745 influenza viruses (152 A/H3N2, 126 A/H1N1 and 467 B). Of the 152 A/H3N2 viruses (from BC, AB, SK, MB, ON & QC), 144 (94.7%) were antigenically similar to A/Perth/16/2009 while 8 (5.3%) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 126 A/H1N1 viruses characterized (from BC, AB, SK, ON, QC & NB), 125 (99.2%) were antigenically similar to A/California/07/2009 and 1 (0.8%) virus tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 467 influenza B viruses characterized, 255 (54.6%) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 254 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 212 (45.4%) influenza B viruses (from BC, AB, MB, ON, QC, NB, NS & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

**Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 745**



Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

## Antiviral Resistance

Since the beginning of the season, NML has tested 656 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 381 influenza A viruses (217 H3N2 and 164 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

**Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012**

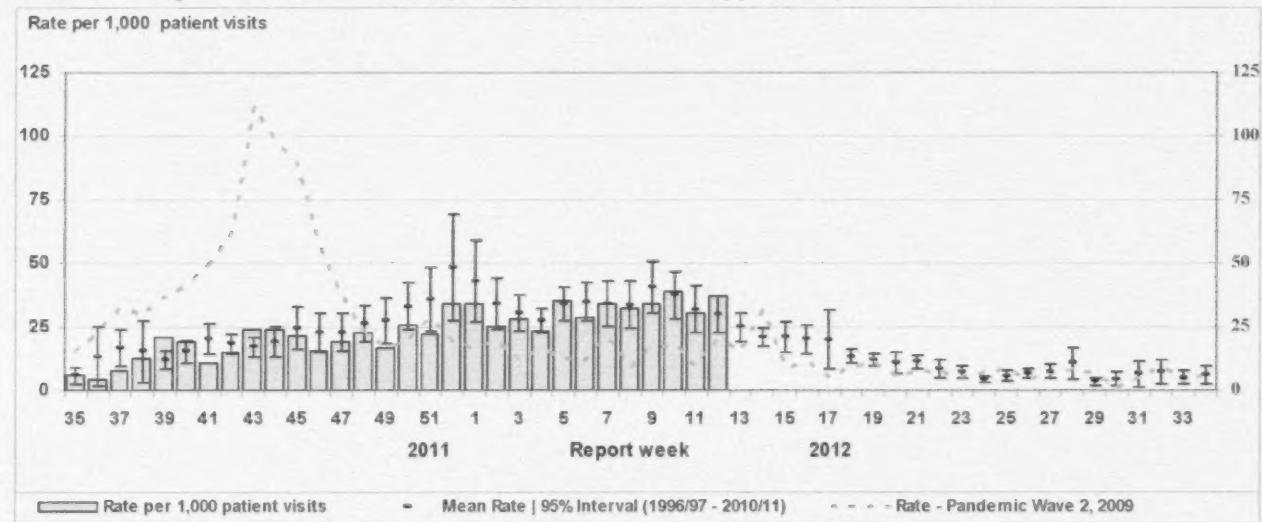
| Virus type and subtype | Oseltamivir |                 | Zanamivir  |                 | Amantadine |                    |
|------------------------|-------------|-----------------|------------|-----------------|------------|--------------------|
|                        | # tested    | # resistant (%) | # tested   | # resistant (%) | # tested   | # resistant (%)    |
| A (H3N2)               | 146         | 0               | 146        | 0               | 217        | 216 (99.5%)        |
| A (H1N1)               | 130         | 0               | 130        | 0               | 164        | 164 (100%)         |
| B                      | 380         | 0               | 380        | 0               | NA*        | NA*                |
| <b>TOTAL</b>           | <b>656</b>  | <b>0</b>        | <b>656</b> | <b>0</b>        | <b>381</b> | <b>380 (99.7%)</b> |

\* NA – not applicable

## Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate increased from the previous week (36.7 ILI consultations per 1,000 patient visits in week 12) and remains within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed in those 5 to 19 years old (71.8/1,000 visits) and children under 5 (51.9/1,000 visits).

**Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)**



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

## Severe Respiratory Illness Surveillance

### Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 12, 54 new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Eleven hospitalizations were due to influenza A (unsubtyped) (in BC, SK & QC); 6 were due to A(H1N1) (in AB & QC); 1 was due to A(H3N2) (in QC) and 36 were due to influenza B (in BC, AB, MB, ON, QC, NS & NL).

To date this season, 365 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 168 (46.0%) were due to influenza A and 197 (54.0%) were due to influenza B.

The proportion of cases by age group is as follows: 15.3% among infants <6 months of age; 20.8% among children 6-23 months of age; 29.6% were between 2-4 years; 23.6% were between 5-9 years; and 10.7% were between 10-16 years. Two influenza-associated deaths have been reported through the IMPACT network this season to date.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

### Influenza Hospitalizations and Deaths (Aggregate Surveillance System)

In week 12, 124 new laboratory-confirmed influenza-associated hospitalizations were reported of which 43 (34.7%) were in those < 20 years of age and 81 (64.5%) in those ≥ 20 years of age; 40% due to influenza A and 60% from influenza B. The hospitalizations were reported in AB (13), SK (1), MB (8), ON (94), PEI (2) and NL (6). Of the 124 hospitalizations, 3 required admission to ICU (2 in MB & 1 in SK). In addition, 10 influenza-associated deaths were reported: 8 in ON (7 adults, 1 child) and 2 in MB (1 adult, 1 child); 9 of the deaths were associated with influenza B infection.

To date this season, 794 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT). The proportion of cases by age group is as follows: 9.9% were in those < 1 year of age; 18.8% were in those 1-4 years of age; 17.1% were in those 5-19 years of age; 11.7% were in those 20-44 years of age; 16.0% were in those 45-64 years of age and 26.5% were in those ≥ 65 years. The proportion of cases by influenza type and subtype is as follows: 14.1% were A(H1N1)pmd09; 20.8% were A(H3N2); 14.6% were influenza A unsubtyped; 50.2% were influenza B and 0.3% had influenza A and B co-infection.

To date there have been 45 hospitalizations requiring ICU admission reported (from AB, SK, MB, & NL) of which 34.7% were < 20 years of age and 65.3% were ≥ 20 years of age. In addition, 37 influenza-associated deaths have been reported to date this season (from AB, SK, MB, & ON) of which 10.8% were among those < 20 years of age and 89.1% in those ≥ 20 years of age. Of the adult deaths, 81.8% were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

## International Influenza Updates

**WHO:** The influenza season started late but seems to be reaching the peak or is decreasing in most countries of the northern hemisphere temperate regions. The predominant type/subtype throughout most of the temperate areas of the northern hemisphere temperate zone has been influenza A(H3N2), although the proportion of influenza B detections is increasing. Increasing genetic and antigenic diversity has been noted in H3N2 viruses in the later part of the influenza season. No significant change in antiviral resistance has been reported so far this season. [World Health Organization influenza update](#)

**United States:** During week 11, influenza activity remained elevated in some areas of the United States, but ILI continued to be relatively low nationally. In week 11, 26.6% (1,353/5,088) of influenza tests were positive of which 93.3% were for influenza A viruses and 6.7% for influenza B. Since October 1, 2011, the CDC characterized 747 influenza viruses: 158 A/H1N1, 472 A/H3N2 and 117 B. Of the 158 A/H1N1 viruses characterized, 156 (98.7%) were A/California/7/2009(H1N1)-like and 2 (1.3%) showed reduced titers with antiserum produced against A/California/7/2009. Of the 472 influenza A/H3N2 viruses that were characterized, 379 (80.3%) were A/Perth/16/2009-like and 93 (19.7%) showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 117 influenza B viruses that were characterized, 49 (41.9%) were B/Brisbane/60/2008-like (B/Victoria lineage) and 68 (58.1%) belonged to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 2.4%, which is at the national baseline. Widespread influenza activity was reported in 20 states, 20 states reported regional influenza activity, 2 states reported localized influenza activity, while the rest reported either sporadic or no activity. Three influenza-associated pediatric deaths were reported in week 11 (which occurred in weeks 5, 9 and 11); bringing the total number of influenza associated-pediatric deaths to date this season to 8.

[Centers for Disease Control and Prevention seasonal influenza report](#)

**Europe:** In week 12, influenza activity continued to decrease in most countries in the WHO European Region. The majority of countries reported decreasing trends and low to medium intensity for clinical activity. Influenza A(H3N2) continues to be the dominant virus in circulation, with some influenza B and a few A(H1N1)pdm09 detections being reported. Of the 1,252 ILI/ARI samples tested in week 12, 511 (40.8%) tested positive for influenza, of which 72.0% were for influenza A and 28.0% for influenza B. Since week 40, 1,013 influenza viruses have been characterized antigenically: 17 were A/California/7/2009(H1N1)-like; 864 were A/Perth/16/2009(H1N1)-like; 21 were B/Florida/4/2006-like (B/Yamagata/16/88 lineage), 20 were B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 91 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage). [EuroFlu weekly electronic bulletin](#)

Upon genetic characterization of the influenza A(H3) viruses, the European Centre for Disease Prevention and Control (ECDC) found that 64.9% fell within the A/Victoria/208/2009 clade, genetic group 3 represented by A/Stockholm/18/2011. Viruses falling within this genetic group are antigenically diverse, and therefore, there is an imperfect match with the current vaccine virus A/Perth/16/2009. This is consistent with the WHO recommendation to change the 2012-2013 northern hemisphere A(H3) vaccine component to A/Victoria/361/2011. [ECDC weekly influenza surveillance overview](#)

## Human Avian Influenza Updates

The WHO webpage where information on new cases of human A/H5N1 avian influenza infection are provided was experiencing technical difficulties at the time of writing this report. Therefore an update cannot be provided at this time. [WHO Avian influenza situation updates](#)

**FluWatch reports include data and information from the following sources:** laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

### ILI definition for the 2011-2012 season

**ILI in the general population:** Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

### Definitions of ILI/Influenza outbreaks for the 2011-2012 season

**Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

**Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

**Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

### Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI\* and

(2) lab confirmed influenza detection(s) together with

(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in less than 50% of the influenza surveillance region†

4 = Widespread: (1) evidence of increased ILI\* and

(2) lab confirmed influenza detection(s) together with

(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in greater than or equal to 50% of the influenza surveillance region†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

\* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: <http://www.phac-aspc.gc.ca/fluwatch/index.html>. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.